



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,845	08/26/2005	Martin Vorbach	2885/86	9148

26646 7590 02/19/2008
KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

VICARY, KEITH E

ART UNIT	PAPER NUMBER
----------	--------------

2183

MAIL DATE	DELIVERY MODE
-----------	---------------

02/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

AK

Office Action Summary	Application No. 10/501,845	Applicant(s) VORBACH ET AL.	
	Examiner Keith Vicary	Art Unit 2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/9/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/24/2008 has been entered.

2. Claims 7-13 and 15-18 are pending in this examination and presented for examination. Claim 7 is currently amended and claims 15-18 are added by an amendment filed 1/24/2008.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7-10 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (Smith) (US 6658564 B1) in view of Panwar et al. (US PAT 5941977) in view of Gee et al. (Gee) (US 6374286).

5. Consider claim 7, Smith discloses providing a program corresponding to a sequence of instructions to the processor for execution of the program (col. 10, lines 49-50, high-level design specification or algorithm); determining, for the reconfigurable field of data processing cells (col. 8, lines 52-53, programmable logic resources), a configuration set corresponding to the program and by running of which the program is executed, the configuration set including a sequence of configurations (col. 11, lines 60-63, compiling hardware functions into configuration patterns using a hardware description language compiler); executing the sequence of configurations (col. 10, lines 50-51, executing on a reconfigurable hardware architecture); and during the executing: storing, in the data stream memory, at least one of the data stream and parts of the data stream (col. 4, lines 22-33, disclose of the random-access memory devices, it is inherent may be written to).

However, Smith does not explicitly disclose that the data stream memory is a register. Smith also does not disclose determining, for each configuration, a respective maximum allowed execution runtime prior to lapse of which the respective configuration is uninterruptible, and for each configuration, monitoring the respective maximum allowed execution runtime in order to interrupt the configuration if the respective maximum allowed execution runtime is exceeded.

On the other hand, Panwar does disclose a register (col. 2, lines 26-29 and col. 7, line 31, registers).

It would have been readily recognized to one of ordinary skill in the art at the time of the invention that one of many motivations of having a register act as a memory would be to allow quick access to data.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the use of Panwar's register with the invention of Smith in order to quickly access data. It would have been readily recognized to one of ordinary skill in the art at the time of the invention that a register's purpose is to store data and thus fits into the environment of Gonion in acting as the data stream memory.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Smith with the register of Panwar in order to allow quicker access to the data stream.

However, neither Smith nor Panwar disclose determining, for each configuration, a respective maximum allowed execution runtime prior to lapse of which the respective configuration is uninterruptible, and for each configuration, monitoring the respective maximum allowed execution runtime in order to interrupt the configuration if the respective maximum allowed execution runtime is exceeded.

On the other hand, Gee does disclose of determining, for each context, a respective maximum allowed execution runtime prior to lapse of which the respective configuration is uninterruptible, and for each configuration, monitoring the respective maximum allowed execution runtime in order to interrupt the configuration if the respective maximum allowed execution runtime is exceeded (see, for example, col. 28, lines 37-44, watchdog timers which enforce context switches between the various

partitions, configurable time-out limits, or col. 23, lines 56-64, the time duration of the partitions can be of different lengths; col. 23, line 45-51, interrupt).

Gee's teaching of his watchdog timer enforces context switches between the various applications to ensure partition scheduling is performed and the processor is kept running in the event of a software error (Gee, col. 28, lines 37-44).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Gee with the invention of Smith and Panwar in order to ensure partition scheduling is performed and the processor is kept running in the event of a software error. It would have been readily recognized to one of ordinary skill in the art at the time of the invention that the applications of Gee, when applied to the invention of Smith, correlates to the configurations of Smith. It would have been readily recognized to one of ordinary skill in the art at the time of the invention that the teaching of Gee would be applicable to the invention of Smith, as Smith also supports multitasking as seen in col. 9, lines 1-4.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Gee with the invention of Smith and Panwar in order to ensure partition scheduling is performed and the processor is kept running in the event of a software error.

6. Consider claim 8, Panwar does disclose at least one: i) of a register allocation device to allocate the register, and ii) a register releasing device to release the register (col. 7, lines 31-39, register window allocation and 54-64, register management).

7. Consider claim 9, Panwar discloses that the register allocation device is preserved over multiple reconfigurations of the reconfigurable field of data processing cells (col. 2, lines 25-42, col. 6, lines 32-36, col. 7, lines 31-39 and 54-64; the multithreading aspect in which each thread has its corresponding registers conserved correlates to the different reconfigurations).

8. Consider claim 10, Smith discloses that the register is a RAM PAE (col. 4, lines 22-33, disclose of the random-access memory devices).

9. Consider claim 15, Gee discloses a watchdog is used to recognize an exceedance of each respective maximum allowed execution runtime (see, for example, col. 28, lines 37-44, watchdog timers which enforce context switches between the various partitions, configurable time-out limits, or col. 23, lines 56-64, the time duration of the partitions can be of different lengths; col. 23, line 45-51, interrupt).

10. Consider claim 16, Gee discloses that any one of the configurations that exceeds its respective maximum allowed execution runtime is treated as illegal (see, for example, col. 28, lines 37-44, watchdog timers which enforce context switches between the various partitions, configurable time-out limits, or col. 23, lines 56-64, the time duration of the partitions can be of different lengths; col. 23, line 45-51, interrupt).

11. Consider claim 17, Gee discloses that any one of the configurations that exceeds its respective maximum allowed execution runtime is treated as illegal (see, for example, col. 28, lines 37-44, watchdog timers which enforce context switches between the various partitions, configurable time-out limits, or col. 23, lines 56-64, the time duration of the partitions can be of different lengths; col. 23, line 45-51, interrupt).

12. Consider claim 18, Smith discloses that the sequence of configurations corresponds to the sequence of instructions (col. 11, lines 60-63, compiling hardware functions into configuration patterns using a hardware description language compiler).

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Panwar, and Gee as applied to claim 7 above, and further in view of Dockser (US PAT 5860119).

14. Consider claim 11, Panwar discloses a register (col. 2, lines 26-29 and col. 7, line 31 as above) and both Smith and Gee discloses of multitasking and executing of at least one of two different tasks of the multitask application (Smith, col. 9, lines 1-4, multitasking; Gee, col. 28, lines 37-44 as above, context switching). However, Smith, Panwar, and Gee do not explicitly disclose the register configured to provide read and write access when a virtual FIFO dividing line is implemented.

On the other hand, Dockser does disclose register configured to provide read and write access (col. 4, lines 32-35, receive mode and transmit mode, and col. 5, lines 56-65, read and write pointers) when a virtual FIFO dividing line is implemented (col. 3,

lines 10-30, lines 54-56; the last word flag and end-of-packet detection means correlate to the said virtual FIFO dividing line).

Using the invention of Dockser in general makes a FIFO system both simple and inexpensive to implement (Dockser, col. 4, lines 6-40), despite decreases in management overhead.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Dockser with the invention of Smith, Panwar, and Gee in order to implement the FIFO simply and inexpensively while simultaneously minimizing management overhead. It would have been readily recognized to one of ordinary skill in the art at the time of the invention that the teaching of Dockser would be able to be modularly implemented into the invention of Smith, Panwar, and Gee.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the FIFO modifications taught by Dockser with the invention of Smith, Panwar, and Gee in order to implement the FIFO simply and inexpensively while simultaneously minimizing management overhead.

15. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith, Panwar, and Gee as applied to claim 7 above, and further in view of Davis et al. (Davis) (US PAT 4041462).

16. Consider claim 12, Smith, Panwar, and Gee do not explicitly disclose at least one memory unit configured for use as a stack and being configured to indicate at least one of a stack underflow state and a stack overflow state.

On the other hand, Davis does disclose at least one memory unit configured for use as a stack and being configured to indicate at least one of a stack underflow state and a stack overflow state (col. 14, lines 1-4, limit checking facilities which test for overflow and underflow, and lines 21-32, PSW)

It would have been readily recognized to one of ordinary skill in the art at the time of the invention that stacks in general are an easily implemented method of dynamic allocation of storage space for data, and a simple efficient mechanism for enqueueing data and/or parameters.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the stacks of Davis with the invention of Smith, Panwar, and Gee in order to easily implement a method of dynamic allocation of storage space for data, and efficiently enqueue data and/or parameters. It would have been readily recognized to one of ordinary skill in the art at the time of the invention that the stacks of Davis would fit into the computing environment of Smith, Panwar, and Gee as it would have been readily recognized to one of ordinary skill in the art at the time of the invention that stacks are prevalent throughout computing today for a wide range of uses.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the stacks of Davis with the invention of Smith, Panwar, and Gee in order to easily implement a method of dynamic allocation of storage space for data, and efficiently enqueue data and/or parameters.

17. Consider claim 13, the claim is rejected for the same reasons as claim 12 above. In addition, Davis discloses the at least one measuring unit is configured to indicate the at least one of the underflow state and overflow state of an operating system unit (col. 14, lines 1-4 and lines 21-32; also, note the PSW is typically accessed by the operating system).

Response to Arguments

18. Applicant's arguments with respect to claim 7 have been considered but are moot in view of the new ground(s) of rejection. The configurations of Smith are analogous to the CIWs of the instant invention.

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Vicary whose telephone number is (571) 270-1314. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 6:15 p.m., EST.

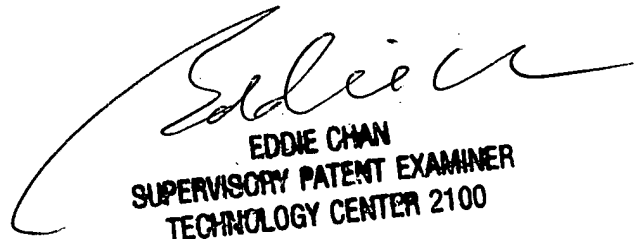
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on 571-272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/501,845
Art Unit: 2183

Page 11

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kv


EDDIE CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100